WHAT IS CLAIMED IS:

1. A wing door opening/closing apparatus for swinging up a wing door pivotally mounted to a vehicle body of a truck or the like in the vicinity of a roof portion of a cargo box provided to said vehicle body so that said wing door overlies said roof portion and lateral sides of said cargo box, characterized in that

the wing door opening/closing apparatus is formed by combining a plurality of wing door opening/closing devices having respective different moment characteristics representing a relationship between a moment caused by the weight of the wing door being rotated and moments generated by the respective wing door opening/closing devices;

at least one of said wing door opening/closing devices including a spring for generating a biasing force for swinging up said wing door and a link mechanism for transmitting the biasing force of said spring to said wing door.

2. The wing door opening/closing apparatus as defined in claim 1 wherein each of said wing door opening/closing devices includes a spring for generating the biasing force for swinging up said wing door and a link mechanism for transmitting the biasing force of said spring to said wing door.

3. A wing door opening/closing apparatus for swinging up a wing door pivotally mounted to a vehicle body of a truck or the like in the vicinity of a roof portion of a cargo box provided to said vehicle body so that said wing door overlies said roof portion and lateral sides of said cargo box, characterized in that

the wing door opening/closing apparatus is made up by a plurality of wing door opening/closing devices;

disparity of a moment produced by one of said wing door opening/closing devices with respect to a moment caused by the weight of the wing door being rotated is compensated by a moment generated by the remaining one(s) of the wing door opening/closing devices;

at least one of said wing door opening/closing devices including a spring for generating a biasing force for swinging up said wing door and a link mechanism for transmitting the biasing force of said spring to said wing door.

4. The wing door opening/closing apparatus as defined in claim 3 wherein each of said wing door opening/closing devices includes a spring for generating the biasing force for swinging up said wing door and a link mechanism for transmitting the biasing force of said spring to said wing door.

5. A wing door opening/closing apparatus for swinging up a wing door pivotally mounted to a vehicle body of a truck or the like in the vicinity of a roof portion of a cargo box provided to said vehicle body so that said wing door overlies said roof portion and lateral sides of said cargo box, characterized in that

the wing door opening/closing apparatus is formed by combining a plurality of wing door opening/closing devices having respective different moment characteristics representing a relation between the angle of rotation of the wing door and a moment generated by the wing door opening/closing devices;

at least one of said wing door opening/closing devices including a spring for generating the biasing force for swinging up said wing door and a link mechanism for transmitting a biasing force of said spring to said wing door.

6. The wing door opening/closing apparatus as defined in claim 5 wherein each of said wing door opening/closing devices includes a spring for generating the biasing force for swinging up said wing door and a link mechanism for transmitting the biasing force of said spring to said wing door.

7. The wing door opening/closing apparatus as defined in claim 5 wherein said plural wing door opening/closing devices having said respective different moment characteristics comprise:

a first wing door opening/closing device generating a maximum moment at an angle of rotation of said wing door larger than an angle of rotation thereof for which the weight moment of said wing door is maximum; and

a second wing door opening/closing device generating the maximum moment at an angle of rotation of said wing door smaller than the angle of rotation thereof for which the weight moment of said wing door is maximum.

8. The wing door opening/closing apparatus as defined in claim 5 wherein

one of said plural wing door opening/closing devices having the respective different moment characteristics is housed within a cargo box frame when said wing door is closed;

the other(s) of said plural wing door opening/closing devices being mounted outside said cargo box frame along a fore-and-aft direction of the vehicle body in a side-by-side relation to said one wing door opening/closing device housed within said cargo box frame.

9. The wing door opening/closing apparatus as defined in claim 5 wherein

said plural wing door opening/closing devices are arranged side-by-side along a vertical direction.

10. The wing door opening/closing apparatus as defined in claim 5 wherein

said first door opening/closing device comprises:

a first-1 link member pivotally connected to the inner side of said wing door, and

a first-2 link member pivotally mounted to said vehicle body and pivotally connected to said first-1 link member;

a first-3 link member pivotally connected to said first-2 link member;

a first-1 spring rod connected to said first-3 link member;

a first-1 guide member for translating a connecting point of said first-3 link member and said spring rod; and

a first spring interposed between the vehicle body and the spring rod; and

said second door opening/closing device comprises:

a second-1 link member pivotally connected to the inner side of said wing door;

a second spring rod linked to said second-1 link member;

a second spring interposed between said vehicle body and said second spring rod; and

a second-1 guide member for translating a linking point of said second-1 link member and said second spring rod.

11. The wing door opening/closing apparatus as defined in claim 5 wherein

of said plural wing door opening/closing devices, both said first and

second wing door opening/closing devices each comprise:

a first link member connected to the inner side of said wing door;

a spring rod pivotally connected to said second-1 link member:

a spring interposed between said vehicle body and said spring rod; and

a guide member for translating a connecting point between said first link member and said spring rod;

an angle between a spring axis direction of said spring and said first link member in said first wing door opening/closing device being smaller than that in said second wing door opening/closing device in a closed position of said wing door.

12. The wing door opening/closing apparatus as defined in claim 5 wherein

of said plural wing door opening/closing devices, both said first and second wing door opening/closing devices each comprises:

a first link member pivotally connected to the inner side of said wing door and pivotally mounted to said vehicle body; and

a spring interposed between said vehicle body and said first link member so as to be pivoted relative to said vehicle body;

wherein

an arm of moment drawn from a pivoted point of said wing to a line interconnecting a point of connection between said spring axis and said first link member and a point of connection between the first link member and the wing door is longer in said first wing door opening/closing device than in second wing door opening/closing device in a closed position of said wing door.

13. The wing door opening/closing apparatus as defined in claim 5

wherein

of said plural wing door opening/closing devices, said first wing door opening/closing devices comprises:

a first-1 link member pivotally connected to the inner side of said wing door;

a first-2 link member pivotally mounted to said vehicle body and pivotally connected to said first-1 link member;

a first-3 link member pivotally connected to said first-2 link member;

a first-1 spring rod connected to said first-3 link member;

a first-1 guide member connected to said first-3 link member; and

a first spring interposed between said vehicle body and the spring rod; and

said second wing door opening/closing device comprises:

a second-1 link member pivotally and slidably connected to the inner side of said wing door and pivotally mounted to said vehicle body;

a second spring rod connected to said second-1 link member; and

a second spring pivotally mounted to said vehicle body and pivotally connected to said second-1 link member with or without interposition of said second spring rod.

14. The wing door opening/closing apparatus as defined in claim 5 wherein

of said plural wing door opening/closing devices, said first wing door opening/closing devices comprises:

a first-1 link member pivotally connected to the inner side of said wing door;

a first-2 link member pivotally mounted to said vehicle body and

pivotally connected to said first-1 link member;

a first-3 link member pivotally connected to said first-2 link member;

a first-1 spring rod connected to said first-3 link member;

a first-1 guide member for translating a connecting point between the first-3 link member and said spring rod; and

a first spring interposed between said vehicle body and the spring rod; and

said second wing door opening/closing device comprises:

a second-1 link member pivotally connected to the inner side of said wing door;

a second spring member connected to said second-1 link member;

a second spring interposed between said vehicle body and said second spring member for pivoting relative to said vehicle body; and

a second-2 link member pivotally mounted to said vehicle body and connected to a connecting point between said second-1 link member and said second spring rod.

15. The wing door opening/closing apparatus as defined in claim 5 wherein

said plural wing door opening/closing devices comprise first and second wing door opening/closing devices having respective different operating ranges.

16. The wing door opening/closing apparatus as defined in claim 5 further comprising:

a stopper for halting the operation of at least one of said plural wing door opening/closing devices.

17. The wing door opening/closing apparatus as defined in claim 16

wherein the wing door opening/closing device comprises:

a spring for generating a driving force for opening/closing said wing door; and

a link mechanism pivotally mounted to said vehicle body, said link mechanism having one side slidably pivotally connected to the inner side of said wing door and having the other side connected to said spring for transmitting a driving force of said spring to said wing door;

a portion of said link mechanism slidingly contacting with said wing door being spaced apart from a slide contact surface of said wing door when said stopper halts operation of said wing door opening/closing device on which acts said stopper.

18. The wing door opening/closing apparatus as defined in claim 5 wherein, of said plural wing door opening/closing devices, at least one wing door opening/closing device comprises a torsion spring interposed between the inner side of said wing door and the vehicle body.